Message

From: Nordine, John [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=6F082FB004BA4D818FE3276686C84C63-JNORDINE]
Sent: 10/31/2013 11:58:22 AM
To: Kay, Robert [rtkay@usgs.gov]
Subject: RE: Central Wire/Techalloy

Bob;

Thanks for the comments and the quick turnaround.

Respectfully,

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"The great end of education is to disciplne rather than finish the mind; to train it to use of its own powers rather than to fill it with the accumulation of others." Tryon Edwards
"Don't interfere with anything in the Constitution. That must be maintained, for it is the only safeguard of our liberties" Abraham Lincoln

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From: Kay, Robert [mailto:rtkay@usgs.gov]
Sent: Wednesday, October 30, 2013 5:31 PM
To: Nordine, John
Subject: Central Wire/Techalloy

Comments on the Central Wire Status Report from Autumnwood Consultants dated October 2013.

General Comments: A section should be added to the early part of the report detailing the hydrogeology of the area.

At some point in this report there should be a map with contours of the total concentration of VOCs during the most recent sampling events that would provide a depiction of the plume throughout its full extent. Separate contours of the concentrations of TCE, PCE, TCA, DCE also should be considered. At least one figure contouring total VOCs concentrations (ideally also separate figures contouring PCE, TCE, TCA, DCE) in cross section along the center line of the plume from the site to either DGW-2 also should be provided. Depicting these data will enable a fuller understanding of conditions at the site. There appear to be some anomalies to the location of some of the contaminants that might help identify natural attenuation processes such and biodegradation or hydrolysis.

This report could use some editorial review. There are numerous instances of redundant, vague, or irrelevant text that detract from the coherence of the report.

Section 1: The terminology for the wells and geoprobe locations in the text should match the terminology in the figures and tables. For example, the text refers to "extraction well no. 1" and "extraction well no. 2". Figure 1-2 shows EW-1 and EW-2, associated with a symbol the legend (which has faint symbols) doesn't clearly describe. This presentation is confusing to the reader. CW should be clear and be consistent with their terminology.

p. 1: This report also should cover
a. the nature and extent of contamination at and near the site, not just at the downgradient edge.
b. trends in contaminant concentration through time in the plume.
c. factors influencing the nature and extent of contamination and trends in concentration--plume capture, biodegradation, source remediation, etc.

CW seems to be generally addressing the first two topics in the text, but it would be best to explicitly state that they are being addressed. It would also help guide the report if all of these topics were explicitly dealt with in the report.

p. 2: Much of the text, especially the third paragraph, is difficult to decipher and needs to be clarified. There's a bit of a mash up of what got sampled for where and when put in with the sample results from different VOC schedules in different wells. Suggest breaking up the discussion into a more distinct presentation of what analytes were sampled from which well during a given sampling event. A separate presentation of what analytes were found in what wells, and what the trends in concentration were in those wells should be provided. The current text goes back and forth on the discussion of the different types of contaminants, which I found confusing.

Where is the actual "other VOC" data discussed in the third paragraph? It should be provided in a figure or table that is referenced in the text so the reader can verify it.

"Central Well" probably should be changed to "Central Wire".

The average pumping rate for each of the extraction wells should be provided for every month the well was operated. This information will help with assessing trends in VOC concentrations and the extent of capture.

PCE concentrations at EW-2 have been increasing overall, not just since December 2011. Why is December 2011 chosen as the reference event?

TCE concentrations at EW-2 are essentially stable overall.

Discussion of the effluent concentrations should include the entire period of operation, not just the three events in 2013. This discussion also should be supported by actual data that is presented in the report, or at least supported by a reference to the actual documents containing the data.

p. 4: Somewhere in the text, not necessarily in this section, there needs to be some discussion and a figure showing the location of the capture zone for the P&T wells relative to the extent of the plume. How does CW know the plume is being captured--putting aside that part of the plume that was beyond capture when the wells were installed? The efficacy of the extraction wells is an important consideration and needs to be assessed in detail.

Why hasn't the deeper Ex. 6 Personal Privacy (PP) well been sampled? The fact that it was deepened doesn't in and of itself, negate the need for ongoing sampling at this location.

Provide at least some overall discussion of the sampling and results from the Union municipal wells. It is my recollection that at least one of these wells has shown VOCs in the past, and that these VOCs are attributed to

another source. These facts, ideally including reference to a document that verifies CW is not the source of contamination at these wells, are already in the site literature and should be presented here.

CW should note the aquifer penetrated by the residential and municipal wells.

Data supporting the statements about the lack of VOC detections in the residential wells should be provided in a referenced table or appendix to this report.

p. 5: I'm not sure what "field well stabilization parameters" are, but the final (stable) values of the field parameters should be presented in an appendix for all the sampling events, not just the most recent. This information can be used to provide insight into the processes affecting VOC concentrations. Suggest the data in table 3-2 be included in one of the monthly summary reports so we can review the stabilization data, and that the final values be added to the comprehensive list.

Picky point, but a well with detectable VOCs, even if below the MCL, is still within the plume. CW should re-write the discussion for conditions at wells MW-2 and perhaps MW-9 to reflect the difference between a detection and an MCL exceedence.

MW-5, it's 190 ppb of PCE in Jan. 2005, not 90 ppb. CW should consider depicting the decrease in PCE concentrations at this well as occurring from Dec. 03, when PCE concentrations were 210 ppb, through June 2013. TCA concentrations, although typically below MCLs, also show an overall decrease since June 2003.

MW-5D, CW should note apparent increase in TCE plume strength from June 1995 through June 2003, then an overall decrease from June 2003 through June 2013, although concentrations have been fairly stable since Dec. 2005. CW also should note that the non-detects for TCE in Jan. and June 2005 were associated with large spikes in PCE concentrations, potentially indicating an absence of PCE degradation during this time period. CW should check the field parameters to determine is there were anomalous geochemical conditions during this time period.

MW-6, note PCE is the analyte being discussed here. In figure 8, change "series 1" to "PCE". Also, why is CW picking the time periods they are picking to compare trends in concentration for this well and a number of others? They do not appear to be the optimal times for comparison. For example, CW notes changes in concentration for well MW-6 from Dec. 2005 through the most recent sampling. Why Dec. 2005? There is nothing particularly significant about the concentration on that date, it's just a continuation of the apparent overall downward trend in concentration since June 1995--with essentially stable concentrations for most of the period from June 2003 through more or less Dec. 2010. CW should present concentration trends relative to time periods providing clearer, more compelling, trends.

MW-HBR, CW is correct that the overall trend in PCE concentration in this well is down since 1995, but concentrations have been stable beginning in June 04.

p. 5/6: Does the discussion of VOC trends that straddle these pages refer to DGW-1I or 1D? CW needs to clarify what data applies to what well.

p. 6: I disagree that there is a downward trend in VOC concentrations at the DGW 1 well cluster. The overall concentration trend at DGW1-I is clearly upward for DCE, and TCE from the start of the monitoring period and from about June 07. At "best" concentrations have been essentially stable for the past 4-5 years. These patterns also hold, to a lesser extent, for TCA. This data suggests prolonged plume movement to the cluster beginning in late 2007, with and overall increase, to stable concentrations for the past few years.

At DGW-1D the concentration of DCE is clearly down through time, but the concentration of TCE is up (with the exception of the last sampling date). This data also suggest plume movement into the area by early 2002,

with increasing to stable concentrations in the past few years. The decline in DCE coupled with the increase in TCE suggests less PCE/TCE biodegradation, or perhaps less hydrolysis of 1,1,1-TCA through time.

A paragraph describing the implications of the data shown in figure 3-1 should be added. It's not enough to show a figure, CW needs to explain what the figure shows (flow to the northwest) and what that means (plume movement to the northwest). This discussion should be included in the hydrogeology section suggested earlier in the report.

Section 4.0: This section would be easier to understand if background information on the hydrogeology, nature and extent of contamination, and well information (what aquifer is being used by the residential wells) was provided earlier in the report, including appropriate figures. Showing the leading edge of the plume is not sufficient. CW should add the requested information.

Provide references for the 2007-2008 transport modeling of VOC extent and the plume time-of-travel estimates presented in this section.

As near as I can tell there is no figure 4-1 (or 4-2) in the report. What CW is calling figure 4-1 appears to be labelled figure 4-3. CW needs to accurately label the figures.

Section 4.1.b: The first sentence could use a re-write. Where is "...this well cluster..."?

Figure 4-3 referenced in the text is labelled figure 4-4 in the figures. CW needs to revise their figure captions.

Section 4.2: CW should either discuss the TCE and TCA detections at the GP-22 location and omit discussion of the other VOCs detected and GP18 and GP22, or lead with the TCE and TCA. The current text is hard to follow and burying the discussion of the important data further obscures the discussion.

Figure 4-2 provides data and plots of VOC concentrations through time at some of the Geoprobe locations. Contrary to the text, it does not include "...plots of sampling locations...". CW needs to re-write this text to more accurately reflect the contents of the figure.

Figure 4-3 is a series of cross sections showing VOC concentrations at the various Geoprobe locations sampled in 2013, not fence diagrams. Correct terminology should be used in the text and the figures.

The contouring in figure 4-3 is incorrect in a number of locations.

There is no need for most of these cross sections. They contain largely redundant data and are poorly oriented relative to the leading edge of the plume and the line of section. CW should delete figure 4-3, and revise it to show conditions transverse to the plume along GP16-GP3-GP20, and along GP17-GP18-GP8-GP19.

A cross section along the direction of plume movement GP3-GP8-GP22 (or DGW2), in combination with a figure showing a map view of the TVOC concentrations in the Geoprobe locations during the 2013 sampling would provide a much clearer depiction of the leading edge of the plume and should be added to the report. This map view figure would be similar to figure 4-3, but would provide more detail on the concentrations.

There is a gap between GP22 and GP19 where contamination near GP8 in excess of MCLs could migrate. This area should be sampled during future work.

Section 4.3: The text should be revised to note the following. Data from the wells and geoprobe locations are consistent with a plume emanating from the CW site to the northwest. This plume is slowly attenuating in most of the area between CW and the extraction wells. The plume looks to be of stable to increasing strength at

MW-HBR, EW-2, and the DGW1 cluster, and likely decreasing in strength at EW-1. The plume has migrated into the Geoprobe area and is increasing in strength at parts of the GP3 and GP8 clusters. It appears the plume has not migrated a substantial distance beyond the GP8 location as of 2013. THe plume also has migrated to the vicinity of the Kishwaukee River near GP-9, but does not appear to have migrated north of the river in this area.

Depending on what can be verified about the capture zone of EW-1 and EW-2, CW needs to discuss if the plume is or is not at least partly evading capture as it moves to the northwest.

Once the plume is beyond the capture zone, natural attenuation processes affect its ongoing movement. These processes need to be discussed and their affect on the plume should be qualitatively verified.

Figures: Most (all?) of the figures showing maps are upside down. They should be oriented correctly.

A number of figures appear to be missing or mis-labelled. Where is figure 1-1? Where is figure 4-1? The figures should be labelled correctly and presented in order.

Autumwood really needs to be lectured about their professionalism. The ticky-tacky issues discussed in the previous two comments wouldn't be acceptable in a report submitted by a high school student, let along an environmental professional.

Many of the figures contains "Notes" sections. Information presented in notes would be more useful if it was presented elsewhere--mostly in the figure caption or within parts of the Legend--or deleted.

Many of the figures do not have location information (Central Wire Site, Union, Illinois) or time information (date of measurement of water levels for figure 3-1, date of sampling for figure 4-3). This information should be added wherever needed.

Figure 1.2: Unless CW wishes to discuss the data from the SEMW wells in the text (and if they have it, perhaps they should, at least for depicting the plume), they should delete the symbols from the figure.

Again, the symbols for the various data-collections points are faint in the legend and difficult to differentiate (for me at least) particularly without the abbreviations that help differentiate them (MW, EW, GP, etc.). The symbols need to be made more useful.

It is my recollection that the Kiswhaukee River and a Geoprobe location north of the river in the vicinity of GP-9 were sampled. The locations of these sampling points needs to be shown on the figure, the data needs to be shown in a table, and some discussion of this data and it's implications as to the nature and extent of contamination and the impacted media needs to be provided in the text.

Figure 2-1 and elsewhere: Picky point, but non-detections should be depicted in the table as "ND" or better still "< detection limit value" rather than "0".

Figure 3-1: Note the date the measurements were taken in the title.

Note "no data" from irrigation wells in the Legend (or just delete the wells you didn't get data from).

What is the "Note" below the Legend? The "sand and gravel aquifer" part of the note needs more explanation to be useful, or better yet it should be deleted.

That the potentiometric surface is presented in feet above mean sea level should be presented in the legend, not the note.

Figure 4-3: Provide a time period for the chemical conditions depicted on this figure.

Much of the chemistry stuff in the Legend is not pertinent to this figure. It should be deleted and presented in figures 4-3a or 4-3b.

In the notes, check the units of concentration, it's more likely to be ug/L than mg/L. Again, this level of chemistry doesn't belong in this figure anyway, so it would be best to just delete it.

Again, "sand and gravel aquifer" has no meaning as the report is currently written and it of limited utility in the notes anyway. Delete it.

Figures 4-3a and 4-3b: See previous comments about shortcomings in these cross sections. Of special importance to the cross sections themselves is the depiction of the "Extent of Plume". The depiction in the figures is in direct contradiction to the presentation of the data for the geoprobe locations. I think CW is attempting to depict the plume along A-A' rather than at the geoprobe locations, but this presentation is confusing given the presentation of the data for the geoprobes. In any event, the location of the plume at A-A' is unknown because there are no data points on the line of section. Per earlier comments the cross sections should be revamped, and when revamped the depiction of the extent of the plume should be based on the data from the sample locations rather than some extrapolation.

If the yellow line is meant to depict land surface, it should be noted.

The water table should be depicted as being present over the entire line of section.

Per comments on earlier versions of the cross sections, the screen interval for the geoprobe samples should be depicted and defined. Geologic information should be provided.

These titles are not very informative. Suggest something like "Results of VOC sampling from Geoprobe locations along the leading edge of the plume, Central Wire site, Union Illinois, October, 2012". At a minimum the date of sampling should be provided somewhere.

Figure 4-2: This figure should be presented before figure 4-3.

Again, the title is a bit confusing. I suggest something like "Concentrations of VOCs exceeding MCLs in Geoprobe wells....".

Delete ug/L from the end of the figure caption.

Figure 4-4: Per comments on earlier graphs, presenting the precipitation and hours pumped data at the bottom of the plot is confusing and difficult to relate to a time period. At a minimum, precipitation should be plotted on a secondary y axis to better show the relation between precipitation events and water levels.

Again, a location (Central Wire, Union Illinois) would be appropriate in the title.

Tables: there should be a master table (or appendix) of the pertinent features of all the wells and geoprobe locations--name, land surface altitude, altitude of top and bottom of screen, water level elevation for each measurement date, etc.

Table 3-1: Again, this table is fine as far as it goes, but the information is probably better presented in a table or appendix with the data from all the other sampling points rather than as a stand alone effort.

Delete "Only chemicals with ...." here. Nothing is being plotted on this table.

Tables 3-2 and 4-2: Again, this detailed information should have been presented in a monthly sampling summary. The final, stable values should be presented in an appendix with all the other chemical data.

Table 4-1: I have no problem with this table, but again, this data should be included in an appendix with all the data from all the sampling points.